

AMENDMENTS TO THE CLAIMS:

1. (currently amended) An isolated nucleic acid sequence which encodes a fusion protein and which is composed of a combination of a nucleic acid sequence encoding a fatty acid or lipid metabolism and one of the following nucleic acids:
 - a) a nucleic acid sequence with the sequence ~~shown~~ depicted in SEQ ID NO: 1,
 - b) nucleic acid sequences which are derived from the nucleic acid sequence ~~shown~~ depicted in SEQ ID NO: 1 as the result of the degeneracy of the genetic code,
 - c) derivatives of the nucleic acid sequence shown in SEQ ID NO: 1 which encode polypeptides with the amino acid sequences ~~shown~~ depicted in SEQ ID NO: 2 and which have at least ~~80%~~ 95% homology at the amino acid level.
2. (currently amended) An isolated nucleic acid sequence as claimed in claim 1, wherein a nucleic acid sequence is used as a part of the following fusion protein encoding a protein selected from the protein groups ~~is used as biosynthesis nucleic acid sequence of the fatty acid or lipid metabolism:~~
fatty acid desaturase(s).
3. (currently amended) An isolated nucleic acid sequence as claimed in claim 1, wherein a nucleic acid sequence is used as a part of the fusion protein encoding a ~~of the following protein groups is used as biosynthesis nucleic acid sequence of the fatty acid or lipid metabolism:~~
 $\Delta 4$ desaturase.
4. (currently amended) An isolated nucleic acid sequence as claimed in claim 1, wherein the derivatives mentioned under (e) c have a homology at the amino acid level of 80%, over the entire region of the sequence ~~shown~~ depicted in SEQ ID NO: 2.

5. (withdrawn) An amino acid sequence encoded by a nucleic acid sequence as claimed in claim 1.
6. (previously presented) An isolated nucleic acid construct comprising a nucleic acid sequence as claimed in claim 1, wherein the nucleic acid sequence is linked to one or more regulatory signals.
7. (withdrawn) The use of a nucleic acid sequence as claimed in claim 1 or of a nucleic acid construct comprising said nucleic acid sequence wherein the nucleic acid sequence is linked to one or more regulatory signals for the generation of transgenic plants.
8. (previously presented) A vector comprising a nucleic acid sequence as claimed in claim 1 or a nucleic acid construct comprising said nucleic acid sequence wherein the nucleic acid sequence is linked to one or more regulatory signals.
9. (original) A vector as claimed in claim 8, which is a linear or circular DNA, a phage, a virus, a transposon, a IS element, a phasmid, a phagemid, a cosmid or a plasmid.
10. (currently amended) A non-human organism ~~comprising~~ in which at least one isolated nucleic acid sequence as claimed in claim 1, at least one isolated nucleic acid construct comprising said nucleic acid sequence wherein the nucleic acid sequence is linked to one or more regulatory signals or at least one vector comprising said nucleic acid sequence wherein the nucleic acid sequence is linked to one or more regulatory signals or a nucleic acid construct comprising said nucleic acid sequence wherein the nucleic acid sequence is linked to one or more regulatory signals was introduced.
11. (previously presented) A non-human organism as claimed in claim 10, which is a eukaryotic organism.
12. (previously presented) A non-human organism as claimed in claim 10, which is a plant, a eukaryotic mircoorganism or an animal.

13. (previously presented) A non-human organism as claimed in claim 10, which is a plant, a fungus or a yeast.
14. (previously presented) A non-human organism as claimed in claim 10, which is *Yarrowia lypolytica*, *Saccharomyces cerevisiae*, *Traustochytrium*, *Arabidopsis thaliana*, *Brassica napus* or *Linum usitatissimum*.
15. (withdrawn) A transgenic plant comprising a nucleic acid sequence as claimed in claim 1 or a nucleic acid construct comprising said nucleic acid sequence.
16. (withdrawn) A method of targeting proteins involved in lipid or fatty acid biosynthesis into liposomes or lipid bodies, which comprises combining the protein-encoding nucleic acids and one of the following sequences to give a joint protein-encoding sequence:
 - a) a nucleic acid sequence with the sequence shown in SEQ ID NO: 1,
 - b) nucleic acid sequences which are derived from the nucleic acid sequence shown in SEQ ID NO: 1 as the result of the degeneracy of the generic code,
 - c) derivatives of the nucleic acid sequence shown in SEQ ID NO: 1 which encode polypeptides with the amino acid sequences shown in SEQ ID NO: 2 and which have at least 60% homology at the amino acid level,
 - d) a nucleic acid sequence with the sequence shown in SEQ ID NO: 3 or the amino-terminal portion of the coding region of this sequence, and introducing the resulting sequence into a eukaryotic organism.
17. (withdrawn) A method of targeting proteins involved in lipid or fatty acid biosynthesis into liposomes or lipid bodies, which comprises introducing at least one nucleic acid sequence as claimed in claim 1 or at least one nucleic acid construct comprising said nucleic acid sequence wherein the nucleic acid sequence is linked to one or more regulatory signals into an oil-producing organism.

18. (withdrawn) A method of producing fatty acids or lipids, which comprises introducing at least one nucleic acid sequence as claimed in claim 1 or at least one nucleic acid construct comprising said nucleic acid sequence wherein the nucleic acid sequence is linked to one or more regulatory signals into an oil-producing organism, growing this organism and isolating the oil contained in the organism.
19. (withdrawn) A method of producing fatty acids, which comprises introducing at least one nucleic acid sequence as claimed in claim 1 or at least one nucleic acid construct comprising said nucleic acid sequence wherein the nucleic acid sequence is linked to one or more regulatory signals into an oil-producing organism, growing this organism, isolating the oil contained in the organism and liberating the fatty acids.
20. (withdrawn) A method as claimed in claim 16, wherein the organism is a plant or a eukaryotic microorganism.